



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/204,734	12/03/1998	GREGORY E. BOTTOMLEY	8194-205	5861

20792 7590 09/24/2003

MYERS BIGEL SIBLEY & SAJOVEC
PO BOX 37428
RALEIGH, NC 27627

EXAMINER

FAN, CHIEH M

ART UNIT	PAPER NUMBER
----------	--------------

2634

DATE MAILED: 09/24/2003

17

Please find below and/or attached an Office communication concerning this application or proceeding.

A



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Mailed

SEP 24 2003

Technology Center 2600

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 17

Application Number: 09/204,734
Filing Date: December 03, 1998
Appellant(s): BOTTOMLEY, GREGORY E.

David K. Purks
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/14/2003.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1, 5, 7-9, 12, 16, 18-20, 23, 27 and 29-31.

Claims 6, 28 and 34-39 are allowed.

Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2-4, 10, 11, 13-15, 21, 22, 24-26, 32 and 33 have been canceled.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

Art Unit: 2634

(6) *Issues*

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: Claim 15 has been canceled, and therefore is not at issue on this appeal.

(7) *Grouping of Claims*

The rejection of claims 1, 5, 7-9, 12, 16, 18-20, 23, 27 and 29-31 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

5,812,542

Bruckert et al.

9-1998

(10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1, 5, 7-9, 12, 16, 18-20, 23, 27 and 29-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Bruckert et al. (US Patent 5,812,542, "Bruckert" hereinafter).

Regarding claim 1, Bruckert discloses a method for processing spread spectrum signals from a plurality of traffic channels and a plurality of pilot channels and a plurality of pilot channels, comprising the steps of:

receiving data samples from the plurality of traffic channels and the plurality of pilot channels (see 108 and 148 in Fig. 1);

correlating the received data samples to spreading codes (see 132, 134, 136 in Fig. 1, also see 252 through 259 in Fig. 2, especially the pilot despreader 252 and traffic data despreader 254, note that the despreaders inherently correlate the received data samples to spreading codes in order to despread the received data) to produce pilot despread values (p_1 , p_2 , p_3 in Fig. 1) and traffic despread values (x_1 , x_2 , x_3 in Fig. 1);

forming scale factors corresponding to the relative strengths of the plurality of traffic channels and the plurality of pilot channels (see the mathematical expression in col. 9, line 65; that is, the scale factors Y_j are formed corresponding to the power ratio of the traffic signals and the pilot signals; also see 260 in Fig. 2);

scaling the pilot despread values by the scale factors to form scaled pilot despread values (see col. 9, lines 41-54; that is, the pilot signals p_1 , p_2 , p_3 are scaled by the scale factors Y_j ; for example, p_3 is scaled by Y_{106} ; also see 261 in Fig. 2);

estimating channel response using scaled pilot despread values to produce channel coefficient estimates (see col. 9, lines 41-54; that is, the channel coefficients c_1 , c_2 , c_3 are estimated by dividing the scaled pilot despread values with a quantity; for example, c_3 is estimated by dividing the scaled pilot despread value $Y_{106} \times p_3$ with $I_0 - K_{106} \times E[p_3^2]$; also see 261 in Fig. 2; also note that c_1 , c_2 and c_3 are also called channel coefficients, see col. 12, lines 1-17);

combining the traffic despread values, using the channel coefficient estimates (see col. 6, lines 6-10; also see 130, 158 and 138 in Fig. 1; also see 262, 263 in Fig. 2),

Art Unit: 2634

to obtain detection statistics (see output of rake combiner 138 in Fig. 1) that correspond to the relative strengths of the plurality of traffic channels and the plurality of pilot channels (see col. 9, lines 41-54, col. 10, lines 33-43; also see col. 11, lines 5-16; that is, the detection statistics are obtained corresponding to the channel coefficient estimates and the channel coefficients are estimated corresponding to the scale factors Y_j).

Regarding claim 5, Bruckert also teaches that the step of forming scale factors (see the mathematical expression in col. 9, line 65) comprises the steps of:

estimating power on a pilot channel (see the denominator of the mathematical expression);

estimating power on a traffic channel (see the numerator of the mathematical expression); and

determining scale factors based upon the estimated powers on the pilot channel and the traffic channel (see the mathematical expression in col. 9, line 65).

Regarding claim 7, Bruckert also teaches that the step of forming scale factors comprises the step of forming scale factors corresponding to the relative strengths of the plurality of traffic channels and the plurality of pilot channels using pilot despread values and traffic despread values corresponding to a plurality of delays of a transmitted signal (see col. 3, lines 39-42; col. 4, lines 62-64; also see 166, 168, 170, 132, 134, 136 and 160, 162 and 164 in Fig. 1).

Regarding claim 8, Bruckert also teaches that the step of receiving comprises the step of receiving data samples from the plurality of traffic channels and the plurality of

Art Unit: 2634

pilot channels during soft handoff from a first one of the traffic channels to a second one of the traffic channels (col. 3, lines 25-28 and col. 4, lines 62-66).

Regarding claim 9, Bruckert also teaches that the step of estimating power on a traffic channel comprises the step of estimating an equivalent full rate power on the traffic channel (see the last line of col. 9).

Regarding claim 12, Bruckert also teaches a system for processing spread spectrum signals from a plurality of traffic channels and a plurality of pilot channels, the system comprising:

means for receiving data samples from the plurality of traffic channels and the plurality of pilot channels (see 108 and 148 in Fig. 1);

means for correlating the received data samples to spreading codes (see 132, 134, 136 in Fig. 1, also see 252 through 259 in Fig. 2, especially the pilot despreader 252 and traffic data despreader 254, note that the despreader inherently correlate the received data samples to spreading codes in order to despread the received data) to produce pilot despread values (p_1 , p_2 , p_3 in Fig. 1) and traffic despread values (x_1 , x_2 , x_3 in Fig. 1);

means for forming scale factors corresponding to the relative strengths of the plurality of traffic channels and the plurality of pilot channels (see the mathematical expression in col. 9, line 65; that is, the scale factors Y_j are formed corresponding to the power ratio of the traffic signals and the pilot signals; also see 260 in Fig. 2);

means for scaling the pilot despread values by the scale factors to form scaled pilot despread values (see col. 9, lines 41-54; that is, the pilot signals p_1 , p_2 , p_3 are scaled by the scale factors Y_j ; for example, p_3 is scaled by Y_{106} ; also see 261 in Fig. 2);

means for estimating channel responses using the scaled pilot despread values to produce channel coefficient estimates (see col. 9, lines 41-54; that is, the channel coefficients c_1 , c_2 , c_3 are estimated by dividing the scaled pilot despread values with a quantity; for example, c_3 is estimated by dividing the scaled pilot despread value $Y_{106} \times p_3$ with $I_0 - K_{106} \times E[|p_3|^2]$; also see 261 in Fig. 2; also note that c_1 , c_2 and c_3 are also called channel coefficients, see col. 12, lines 1-17);

means for combining the traffic despread values, using the channel coefficient estimates (see col. 6, lines 6-10; also see 130, 158 and 138 in Fig. 1; also see 262, 263 in Fig. 2), to obtain detection statistics (see output of rake combiner 138 in Fig. 1) that correspond to the relative strengths of the plurality of traffic channels and the plurality of pilot channels (see col. 9, lines 41-54, col. 10, lines 33-43; also see col. 11, lines 5-16; that is, the detection statistics are obtained corresponding to the channel coefficient estimates and the channel coefficients are estimated corresponding to the scale factors Y_j).

Regarding claim 16, Bruckert teaches a system for processing spread spectrum signals from a plurality of traffic channels and a plurality of pilot channels, the system comprising:

means for receiving data samples from the plurality of traffic channels and the plurality of pilot channels (see 108 and 148 in Fig. 1);

means for correlating the received data samples to spreading codes (see 132, 134, 136 in Fig. 1, also see 252 through 259 in Fig. 2, especially the pilot despreader 252 and traffic data despreader 254, note that the despreaders inherently correlate the received data samples to spreading codes in order to despread the received data) to produce pilot despread values (p_1 , p_2 , p_3 in Fig. 1) and traffic despread values (x_1 , x_2 , x_3 in Fig. 1);

means for forming scale factors corresponding to the relative strengths of the plurality of traffic channels and the plurality of pilot channels (see the mathematical expression in col. 9, line 65; that is, the scale factors Y_j are formed corresponding to the power ratio of the traffic signals and the pilot signals; also see 260 in Fig. 2);

means for scaling the pilot despread values by the scale factors to form scaled pilot despread values (see col. 9, lines 41-54; that is, the pilot signals p_1 , p_2 , p_3 are scaled by the scale factors Y_j ; for example, p_3 is scaled by Y_{106} ; also see 261 in Fig. 2);

means for estimating channel responses using the scaled pilot despread values to produce channel coefficient estimates (see col. 9, lines 41-54; that is, the channel coefficients c_1 , c_2 , c_3 are estimated by dividing the scaled pilot despread values with a quantity; for example, c_3 is estimated by dividing the scaled pilot despread value $Y_{106} \times p_3$ with $I_0 - K_{106} \times E[|p_3|^2]$; also see 261 in Fig. 2; also note that c_1 , c_2 and c_3 are also called channel coefficients, see col. 12, lines 1-17);

means for combining the traffic despread values, using the channel coefficient estimates (see col. 6, lines 6-10; also see 130, 158 and 138 in Fig. 1; also see 262, 263 in Fig. 2), to obtain detection statistics (see output of rake combiner 138 in Fig. 1) that

Art Unit: 2634

correspond to the relative strengths of the plurality of traffic channels and the plurality of pilot channels (see col. 9, lines 41-54, col. 10, lines 33-43; also see col. 11, lines 5-16; that is, the detection statistics are obtained corresponding to the channel coefficient estimates and the channel coefficients are estimated corresponding to the scale factors Y_j);

wherein the means for forming scale factors (see the mathematical expression in col. 9, line 65) comprises:

means for estimating power on a pilot channel (see the denominator of the mathematical expression);

means for estimating power on a traffic channel (see the numerator of the mathematical expression); and

means for determining scale factors based upon the estimated powers on the pilot channel and the traffic channel (see the mathematical expression in col. 9, line 65).

Regarding claim 18, Bruckert teaches that the means for forming scale factors comprises means for forming scale factors corresponding to the relative strengths of the plurality of traffic channels and the plurality of pilot channels using pilot despread values and traffic despread values corresponding to a plurality of delays of a transmitted signal (see col. 3, lines 39-42; col. 4, lines 62-64; also see 166, 168, 170, 132, 134, 136 and 160, 162 and 164 in Fig. 1).

Regarding claim 19, Bruckert teaches that the means for receiving comprises soft handoff receiving means (col. 3, lines 25-28 and col. 4, lines 62-66).

Regarding claim 20, Bruckert teaches that the means for estimating power on a traffic channel comprises means for estimating an equivalent full rate power on the traffic channel (see the last line of col. 9).

Regarding claim 23, Bruckert teaches a system for processing spread spectrum signals from a plurality of traffic channels and a plurality of pilot channels, the system comprising:

a receiver that receives data samples from the plurality of traffic channels and the plurality of pilot channels (see 108 and 148 in Fig. 1);

a correlator that correlates the received data samples to spreading codes (see 132, 134, 136 in Fig. 1, also see 252 through 259 in Fig. 2, especially the pilot desreader 252 and traffic data desreader 254, note that the despreaders inherently correlate the received data samples to spreading codes in order to despread the received data) to produce pilot despread values (p_1 , p_2 , p_3 in Fig. 1) and traffic despread values (x_1 , x_2 , x_3 in Fig. 1);

a scale factor estimator that estimates scale factors corresponding to the relative strengths of the plurality of traffic channels and the plurality of pilot channels (see the mathematical expression in col. 9, line 65; that is, the scale factors Y_j are formed corresponding to the power ratio of the traffic signals and the pilot signals; also see 260 in Fig. 2);

a scaler that scales the pilot despread values by the scale factors to form scaled pilot despread values (see col. 9, lines 41-54; that is, the pilot signals p_1 , p_2 , p_3 are scaled by the scale factors Y_j ; for example, p_3 is scaled by Y_{106} ; also see 261 in Fig. 2);

a channel coefficient estimator that estimates channel responses using the scaled pilot despread values to produce channel coefficient estimates (see col. 9, lines 41-54; that is, the channel coefficients c_1 , c_2 , c_3 are estimated by dividing the scaled pilot despread values with a quantity; for example, c_3 is estimated by dividing the scaled pilot despread value $Y_{106} \times p_3$ with $I_0 - K_{106} \times E[|p_3|^2]$; also see 261 in Fig. 2; also note that c_1 , c_2 and c_3 are also called channel coefficients, see col. 12, lines 1-17);

a combiner that combines the traffic despread values, using the channel coefficient estimates (see col. 6, lines 6-10; also see 130, 158 and 138 in Fig. 1; also see 262, 263 in Fig. 2), to obtain detection statistics (see output of rake combiner 138 in Fig. 1) that correspond to the relative strengths of the plurality of traffic channels and the plurality of pilot channels (see col. 9, lines 41-54, col. 10, lines 33-43; also see col. 11, lines 5-16; that is, the detection statistics are obtained corresponding to the channel coefficient estimates and the channel coefficients are estimated corresponding to the scale factors Y_j).

Regarding claim 27, Bruckert teaches that the scale factor estimator (see the mathematical expression in col. 9, line 65) comprises:

a pilot channel power estimator (see the numerator of the mathematical expression); and

a traffic channel power estimator (see the numerator of the mathematical expression).

Regarding claim 29, Bruckert teaches that the scale factor estimator forms scale factors corresponding to the relative strengths of the plurality of traffic channels and the

Art Unit: 2634

plurality of pilot channels using pilot despread values and traffic despread values corresponding to a plurality of delays of a transmitted signal (see col. 3, lines 39-42; col. 4, lines 62-64; also see 166, 168, 170, 132, 134, 136 and 160, 162 and 164 in Fig. 1).

Regarding claim 30, Bruckert teaches that the receiver comprises a soft handoff receiver (col. 3, lines 25-28 and col. 4, lines 62-66).

Regarding claim 31, Bruckert teaches that the traffic channel power estimator comprises an equivalent full rate power traffic channel estimator (see the last line of col. 9).

(11) Response to Argument

The appellant only makes argument with respect to claim 1 because the appellant considers claim 1 is representative of the claims on Appeal. The appellant's argument with respect to claim 1 is not persuasive for the following reasons.

(a) Appellant argues that, *according to Claim 1, pilot despread values are scaled before channel responses are estimated from the scaled pilot despread values. In sharp contrast, Bruckert instructs and shows in FIG. 2 that at "step 258, the signals received from steps 253, 255, 256 and 257 are smoothed over time ...". (Bruckert, Col. 9, lines 19-20). At step 259 "the smoothed pilot signals p3 and p'3 from base station 106 are averaged to produce an estimate of the pilot signal". (Bruckert, Col. 9, lines 33-35). At step 261, weighting coefficients c1, c2 and c3 are determined from the smoothed pilot signals, p1, p2, p3 using three disclosed equations. (Bruckert, Col. 9, lines 39-55). At step 262, "the first plurality of traffic channels x1, x2 and x3 generated by the first rake receiver 126 are weighted by the first plurality of complex weighting coefficients c1, c2*

Art Unit: 2634

and c3". (Col. 11, lines 58). Consequently, Bruckert expressly teaches away from Claim 1 by describing, and showing in FIG. 2, that estimates of pilot signals are formed (step 259) before traffic channels are weighted (step 262). (See page 5 of the Brief of Appeal)

Examiner's response --- The appellant appears to argue that the step 259 of Bruckert corresponds to the claimed limitation "estimating the channel response" and the step 262 of Bruckert corresponds to the claimed limitation "scaling the pilot despread values". Since the step 259 is performed before the step 262, the appellant argues that Bruckert does not teach that the pilot despread values are scaled before channel responses are estimated from the scaled pilot despread values. In response to such argument, Bruckert clearly teaches the step 259 is used to produce an estimate of the pilot signal (col. 9, lines 33-35 of Bruckert), not an estimate of the channel response. The pilot signal is not the channel response. It is improper to consider that the step 259 is equivalent to the claimed limitation "estimating the channel response". Further, the step 262 of Bruckert is used to weight the traffic despread values (col. 11, lines 5-8 of Bruckert), not to weight or scale the pilot despread values. The traffic despread values and the pilot despread values are different. It is improper to consider that the step 262 is equivalent to the claimed limitation "scaling the pilot despread values". Therefore, the argument that Bruckert does not teach the claimed limitation because the step 259 is performed before the step 262 is deemed to be incorrect. Furthermore, Bruckert does teach that the pilot despread values are scaled before channel responses are estimated from the scaled pilot despread values. Bruckert teaches that (see col. 9, lines 41-54) the channel coefficient estimates c1, c2, c3 are

Art Unit: 2634

estimated according to the mathematical expressions shown in col. 9, lines 41-54. The channel coefficient estimates c_1 , c_2 , c_3 are estimated by dividing the scaled pilot despread values with a quantity. For example, c_3 is estimated by dividing the scaled pilot despread value $Y_{106} \times p_3$ with $I_0 - K_{106} \times E[|p_3|^2]$. Therefore, the pilot despread values are clearly scaled before channel responses are estimated from the scaled pilot despread values.

(b) The appellant argues that *the complex weighting coefficients c_1 , c_2 , c_3 are not the estimates of the channel response* (see pages 5-6 of the Brief of Appeal).

Examiner's response --- The coefficients c_1 , c_2 , and c_3 are the estimates of channel response because Bruckert teaches that the coefficients c_i ($i = 1, 2, 3$) are also called channel coefficients (see col. 12, lines 1-17). The channel coefficients c_i are called weighting coefficients because they are used to weight the despread traffic values (see 130 in Fig. 1 of Bruckert) before the weighted traffic despread values are combined (see 138 in Fig.1 of Bruckert). The interpretation of c_i as the channel estimates is consistent with the definition of the channel estimates in the specification of the present application. As shown in Fig. 2 of the present application, the channel estimates are the outputs of the channel coefficient estimators 204a-204c. The channel estimates are then used to weight the traffic despread values (see 302a-302c in Fig. 3 of the present application). That is, the channel estimates in the present application are also the channel coefficients used as the weighting coefficients to weight the traffic despread values. Therefore, the channel coefficients c_1 , c_2 , and c_3 of Bruckert are the channel estimates because they are clearly consistent with the

definition of the claimed limitation "channel coefficient estimates" as defined in the specification of the present application.

(c) The appellant argues that *the Advisory Action appears to improperly read the teaching of Bruckert onto prior art Figs. 2 and 3 of the present application as a basis for rejecting Claim 1* (see pages 6-7 of the Brief of Appeal).

Examiner's response --- The examiner does not read the teaching of Bruckert onto prior art Figs. 2 and 3 of the present application as a basis for rejecting Claim 1. In the advisory action, the examiner merely tries to show that the weighting coefficients c_1 , c_2 and c_3 of Bruckert are the channel estimates because they are consistent with the definition of the claimed limitation "channel coefficient estimates" as defined in the specification of the present application. Figs. 2 and 3 are still parts of the specification even though they are directed to the "Prior Art". According Figs. 2 and 3 of the present application, the appellant clearly recognizes the "channel coefficient estimates" are the weighting coefficients used to weight the traffic despread values. Furthermore, as shown in Fig. 4 of the present application, the channel estimates are also the outputs of the channel coefficient estimators 204a-204c. The channel estimates are then used to weight the traffic despread values (see 302a-302c in Fig. 5 of the present application). Therefore, even if the examiner interprets the "channel coefficient estimates" according to Figs 4 and 5, the channel coefficient estimates are still the weighting coefficients used to weight the traffic despread values. The coefficients c_1 , c_2 and c_3 of Bruckert are still consistent with the channel coefficient estimates defined in the specification of the present application. The appellant may argue that, as shown in Fig. 5 of the present

Art Unit: 2634

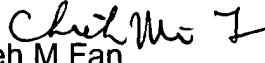
application, the channel estimates are used to weight the scaled traffic despread values (see 502a-502c), not the traffic scaled values. According to the specification of the present application, there are three approaches to apply the scale factors: (1) scaling the traffic despread values, (2) scaling the channel estimates and (3) scaling the pilot despread values (see page 8, lines 26-31). Since Claim 1 is directed to the third approach, i.e., scaling the pilot despread values, the scaler 502a-502c shown in Fig. 5 do not scale the traffic despread values.

For the above reasons, it is believed that the rejections should be sustained.

Application/Control Number: 09/204,734
Art Unit: 2634

Page 17


Respectfully submitted,


Chieh M Fan
Examiner
Art Unit 2634

cmf
September 22, 2003

Conferees


Stephen Chin
Supervisory Patent Examiner
Art Unit 2634


Shuwang Liu
Primary Examiner
Art Unit 2634

MYERS BIGEL SIBLEY & SAJOVEC
PO BOX 37428
RALEIGH, NC 27627